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IDENTIKIT

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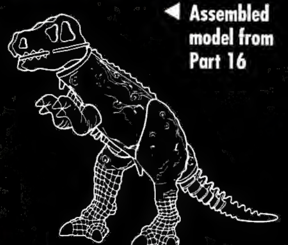
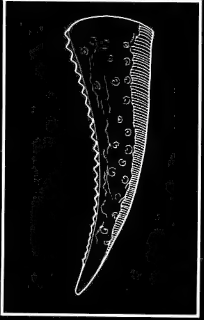
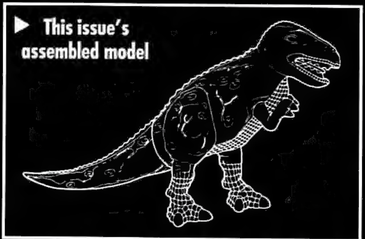


◄ Assembled model from Part 16



► This issue's model piece
Model part 15 –
right side of tail



► This issue's assembled model

▲ Your complete *T rex* model

Hold the right side of the tail so the jagged edge is pointing upwards. Attach the green half tail on to the dinosaur's skeleton tail.

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PLATEOSAURUS

Plant-eating *Plateosaurus* was the first large dinosaur to live on Earth.

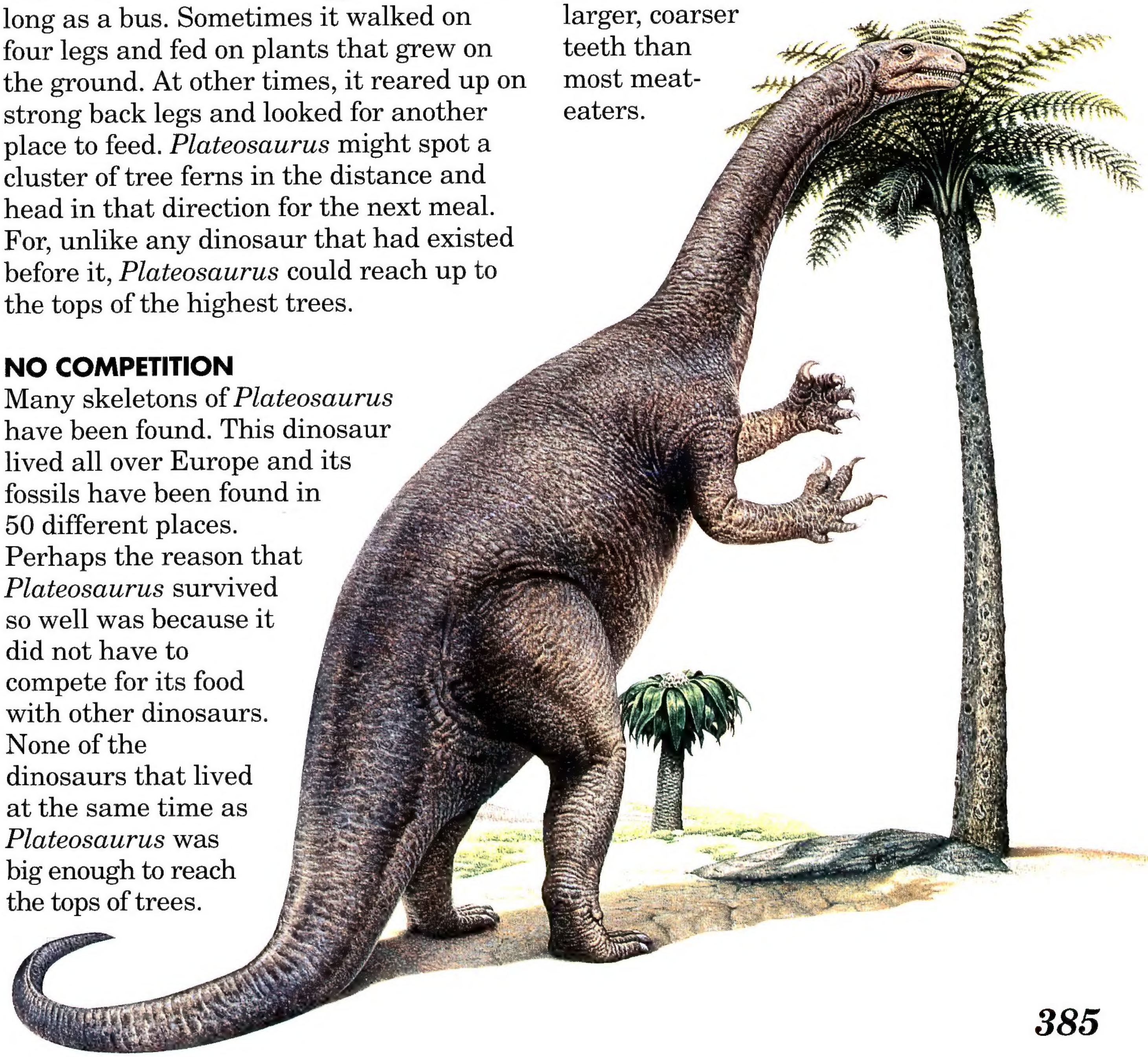
Before *Plateosaurus* lived, the biggest plant-eater was about the size of a large pig. *Plateosaurus* was much bigger – about as long as a bus. Sometimes it walked on four legs and fed on plants that grew on the ground. At other times, it reared up on strong back legs and looked for another place to feed. *Plateosaurus* might spot a cluster of tree ferns in the distance and head in that direction for the next meal. For, unlike any dinosaur that had existed before it, *Plateosaurus* could reach up to the tops of the highest trees.

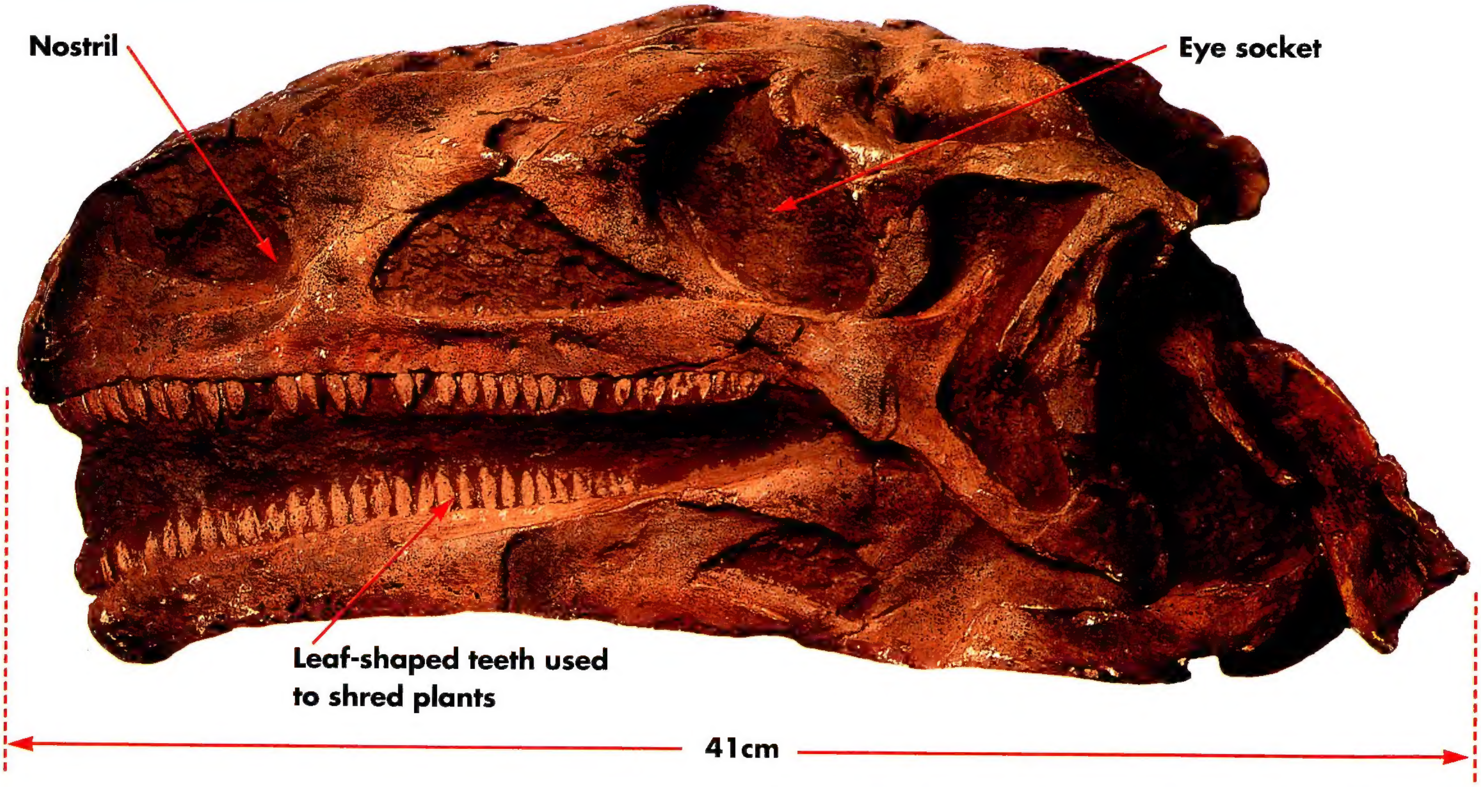
NO COMPETITION

Many skeletons of *Plateosaurus* have been found. This dinosaur lived all over Europe and its fossils have been found in 50 different places. Perhaps the reason that *Plateosaurus* survived so well was because it did not have to compete for its food with other dinosaurs. None of the dinosaurs that lived at the same time as *Plateosaurus* was big enough to reach the tops of trees.

LEAF SHREDDER

Plateosaurus had leaf-shaped teeth with jagged edges. It used them to strip leaves from branches and shred tough shoots. Some scientists think that it ate meat as well as plants because its teeth were jagged like those of meat-eating theropods. But *Plateosaurus* had larger, coarser teeth than most meat-eaters.





Plateosaurus' skull has a set of teeth that look vicious enough to cut through meat, but they were actually designed for shredding leaves.

MASHED FOOD

Plateosaurus' teeth and jaws were not well designed for chewing. It probably swallowed stones that lay in its stomach and worked like a grinder, mashing food to a pulp.

OFF BALANCE

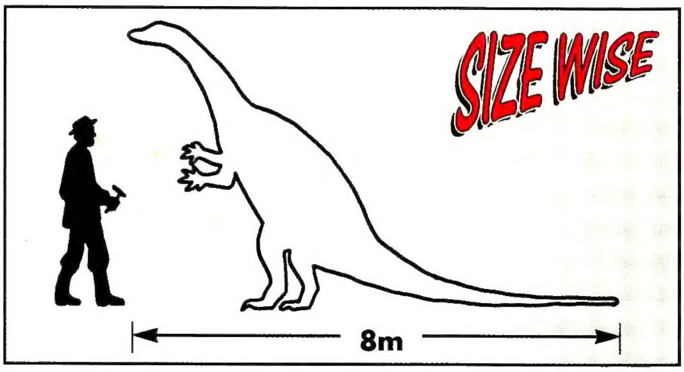
Although it tilted back easily onto its hind legs to feed, *Plateosaurus* found walking upright quite difficult. Its long, flexible neck made it too top-heavy to walk on two legs all of the time. *Plateosaurus* was much more comfortable walking on all fours.

MONSTER FACTS

- **NAME:** *Plateosaurus* (plat-ee-oh-saw-rus) means 'flat reptile'
- **SIZE:** between 6 and 8m long
- **FOOD:** plants and leaves from trees
- **LIVED:** about 210 million years ago in the Late Triassic Period in France, Switzerland and Germany

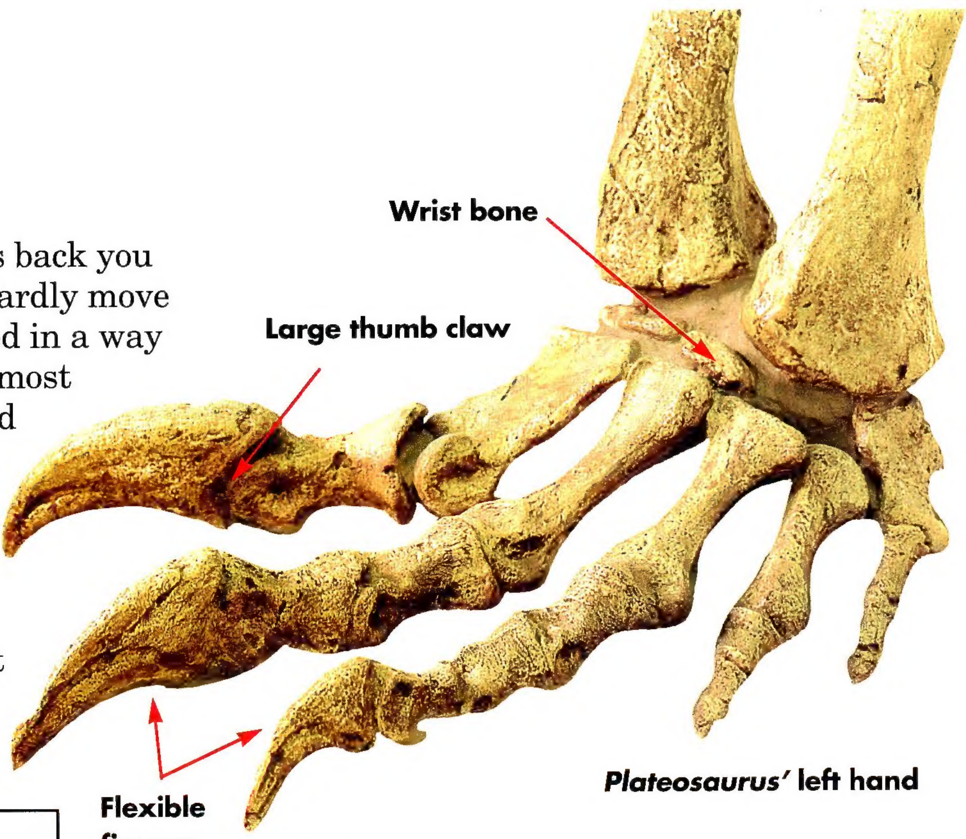
Is it true that when dinosaurs first appeared on Earth all the continents were joined?

Yes! There were no seas dividing the land 225 million years ago. Early dinosaurs could wander all over the place. About 20 million years later, at the end of the Early Jurassic Period, two continents had formed. They were called Laurasia and Gondwanaland.



FLEXIBLE FINGERS

If you try to bend your fingers back you will probably find that they hardly move at all. Your bones are arranged in a way that makes this movement almost impossible. *Plateosaurus* could bend its fingers back quite easily. Its fingers were remarkable. The dinosaur rested them on the ground like toes, but if *Plateosaurus* wanted to grasp something, it bent its five clawed fingers forward in a tight grip.



BIG THUMB

Plateosaurus really only had one useful weapon. This was its large, scythe-like thumb claw. *Plateosaurus* was not a fast-moving dinosaur so it could not rely on speed for a quick escape. Nor did it have dagger-like teeth. When attacked, it used its thumb claw. The claw was also good for gathering leaves like a garden

Plateosaurus did not only use its claws for defence. It may also have used its bendy fingers to dig in the ground to reach juicy roots. Today's bears (above) do much the same thing, especially in winter when food is scarce.

ORNITHOMIMUS

***Ornithomimus* was a sprint runner of the dinosaur world.**

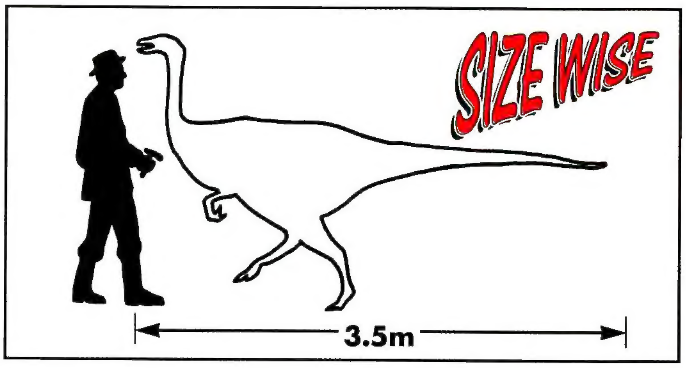
Intelligent *Ornithomimus* was one of the most graceful and lively of all dinosaurs. About the size of a pony and as long as a car, *Ornithomimus* is part of a group known as 'ostrich dinosaurs'. It had a lot in common with those big, flightless birds of today. Its long, muscular legs were built for speed and agility. *Ornithomimus* had a small skull at the end of its long, slender neck and its bones were very light.

VARIED DIET

Nimble *Ornithomimus* had a wide choice of things to eat. It was probably omnivorous, which means that it ate both meat and plants. *Ornithomimus* used its long arms and clawed hands to pull down branches. It could reach the choicest buds and berries. With its keen eyes and great speed, *Ornithomimus* could chase small lizards or pluck flying insects from the air. It chomped them up in its horny, toothless beak and swallowed them in chunks.

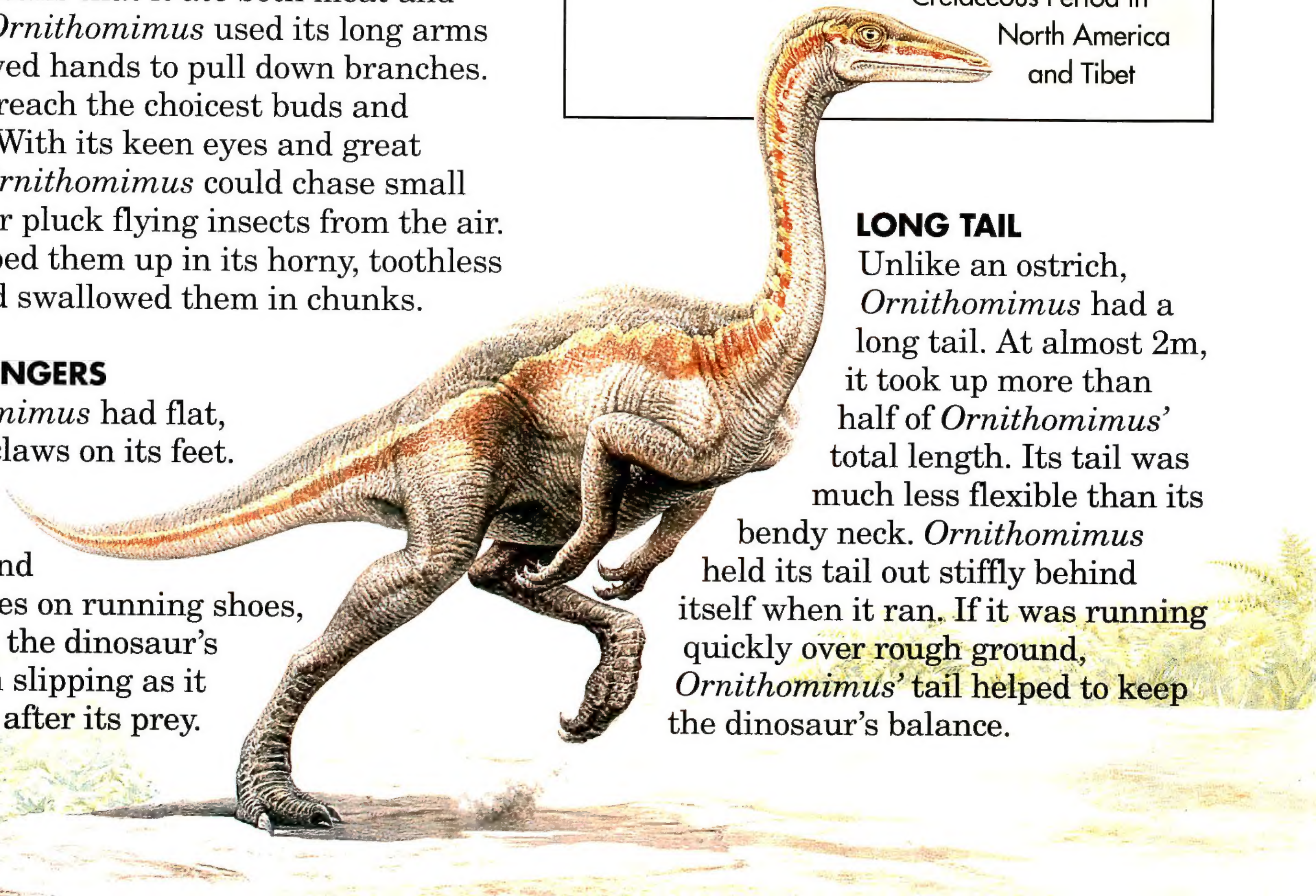
THREE FINGERS

Ornithomimus had flat, narrow claws on its feet. These gripped the ground like spikes on running shoes, stopping the dinosaur's feet from slipping as it sprinted after its prey.



MONSTER FACTS

- **NAME:** *Ornithomimus* (or-nith-oh-mime-us) means 'bird mimic'
- **SIZE:** 3.5m long
- **FOOD:** anything small enough to swallow – insects, lizards, mammals and fruit
- **LIVED:** 70 million years ago in the Late Cretaceous Period in North America and Tibet



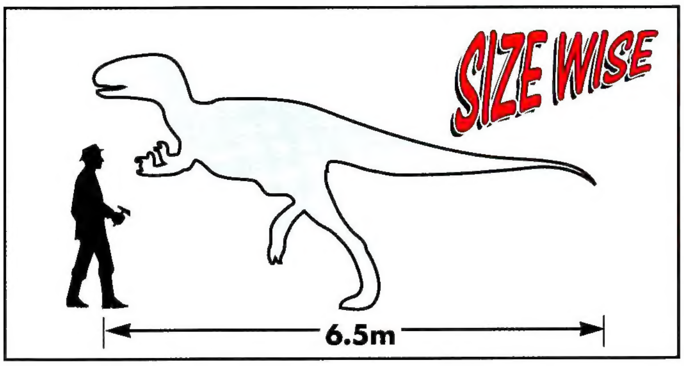
LONG TAIL

Unlike an ostrich, *Ornithomimus* had a long tail. At almost 2m, it took up more than half of *Ornithomimus'* total length. Its tail was much less flexible than its bendy neck. *Ornithomimus* held its tail out stiffly behind itself when it ran. If it was running quickly over rough ground, *Ornithomimus'* tail helped to keep the dinosaur's balance.

ABELISAURUS

***Abelisaurus* had knife-like teeth and a skull as long as a cricket bat.**

Everything we know about *Abelisaurus* is based only on one skull. It was discovered in Argentina in the 1980s. No bones from the dinosaur's body were found, but scientists have built up a good picture of what meat-eating *Abelisaurus* looked like.

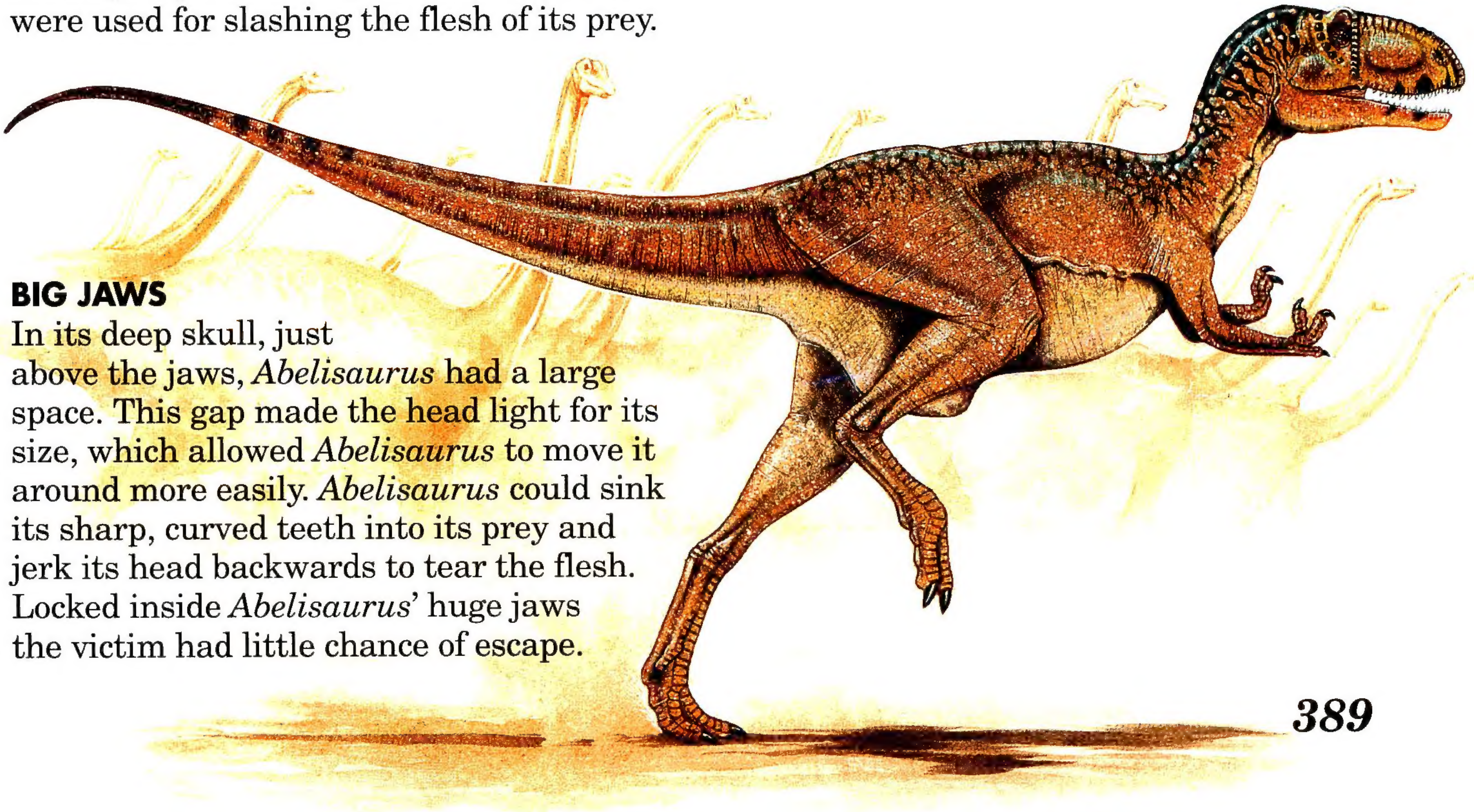


MONSTER FACTS

- **NAME:** *Abelisaurus* (ah-bell-ih-saw-rus) means 'Abel's reptile'
- **SIZE:** about 6.5m long
- **FOOD:** meat
- **LIVED:** about 80 million years ago in the Late Cretaceous Period in Patagonia, Argentina

TWO LEGGED

Abelisaurus was longer than a Nile crocodile and weighed about as much as a rhinoceros. It was taller than the goal-posts on a football pitch and walked on two muscular legs. It was able to move quickly in short attacking bursts of speed. Like *Tyrannosaurus* (to which it may have been distantly related), its front legs were tiny and high up on its body. Its clawed hands were used for slashing the flesh of its prey.



BIG JAWS

In its deep skull, just above the jaws, *Abelisaurus* had a large space. This gap made the head light for its size, which allowed *Abelisaurus* to move it around more easily. *Abelisaurus* could sink its sharp, curved teeth into its prey and jerk its head backwards to tear the flesh. Locked inside *Abelisaurus*' huge jaws the victim had little chance of escape.

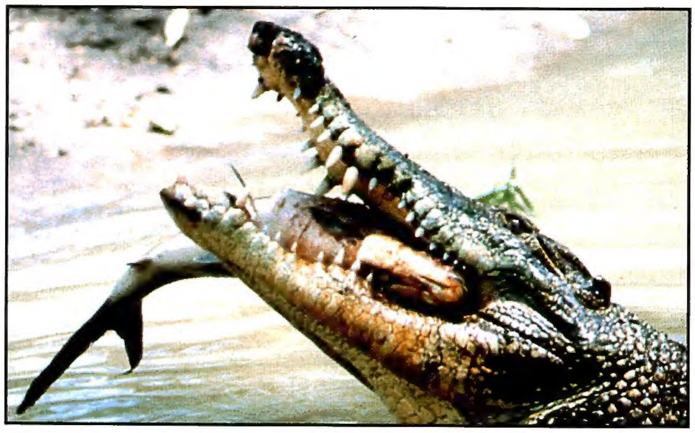
The other 'Jaws'

Crocodiles appeared on Earth at about the same time as dinosaurs. These successful reptiles lived in the sea.

Dinosaurs did not live in the seas. Instead, the oceans were crowded with many other kinds of reptiles.

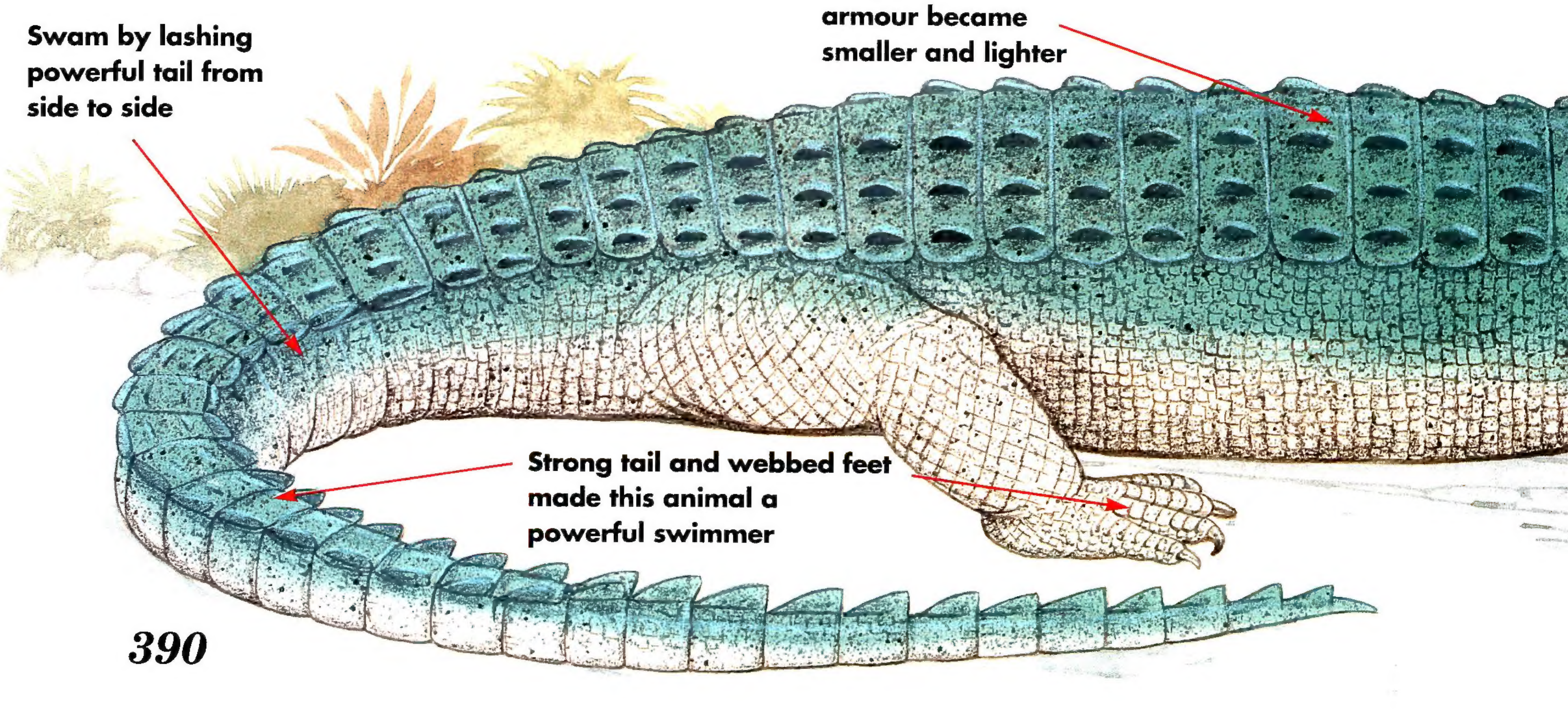
MONSTERS FROM THE DEEP

There was one group of fearsome prehistoric hunters, whose freshwater cousins still live today. If you swam in the prehistoric sea, they would swallow you for lunch. These were the sea-crocodiles.



Just like the prehistoric sea-crocs, the modern saltwater crocodile (above and top) can travel long distances in the sea, but usually stays near the coast. Many saltwater crocodiles are killed by people, so they are now protected by law.

Take a look at dangerous *Teleosaurus* (below) and see how crocodiles adapted to a life at sea.



Swam by lashing powerful tail from side to side
Bony plates of armour became smaller and lighter
Strong tail and webbed feet made this animal a powerful swimmer

IT'S A FACT

ONLY ONE SEA-CROC

There are 22 kinds of crocodiles alive today. Only one of these lives in the sea. It is the estuarine or saltwater crocodile. It is not a descendant of the prehistoric sea-crocs, but a freshwater crocodile that has recently taken to the sea.

CLOSE COUSINS

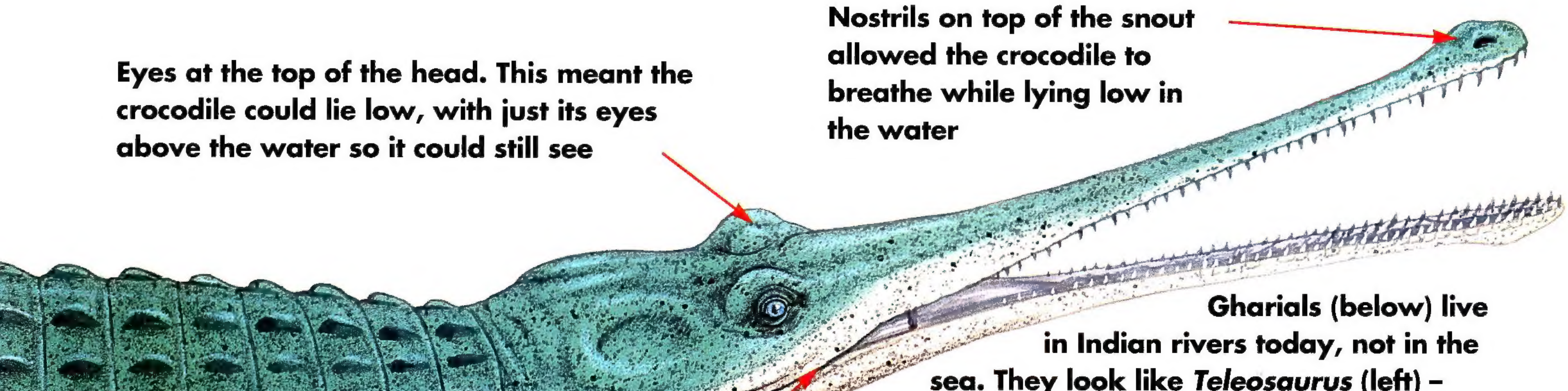
Crocodiles are closely related to dinosaurs and at one time they lived alongside each other. Somehow, crocodiles survived the catastrophe that spelled **THE END** for the dinosaurs. Today, crocodiles remain almost unchanged.

FROM LAND TO THE SEA

Early in their evolution, crocodiles went back into the water, away from the dinosaurs on land. Their body shapes changed so that they were more suited to life in the water. Most early crocodiles lurked in rivers and swamps, feeding on fish and grabbing animals that came to drink. A few crocodiles went further – out to sea. They looked like a modern crocodile called a gharial (ga-ree-al).

STREAMLINED CROCS

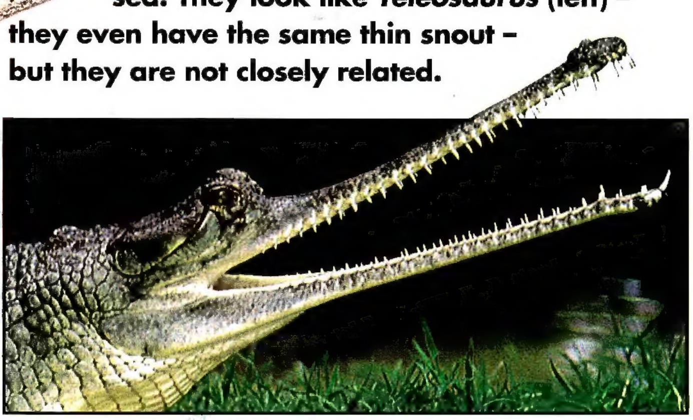
One gharial-like sea-croc was *Teleosaurus* (tel-ee-oh-saw-rus), the 'end reptile', another was *Steneosaurus* (sten-ee-oh-saw-rus). These deadly beasts had streamlined bodies that were the length of a family car. Rows of needle teeth helped them to catch flapping fish and squirming squid. In time, their skin became less bumpy and they spent most of their lives in the water. Like modern turtles, they only had to come ashore for one thing – to lay their eggs.



Eyes at the top of the head. This meant the crocodile could lie low, with just its eyes above the water so it could still see

Nostrils on top of the snout allowed the crocodile to breathe while lying low in the water

Special flap at back of the tongue. It let the crocodile open its mouth under water and breathe through its nostrils at the same time – without drowning



Gharials (below) live in Indian rivers today, not in the sea. They look like *Teleosaurus* (left) – they even have the same thin snout – but they are not closely related.

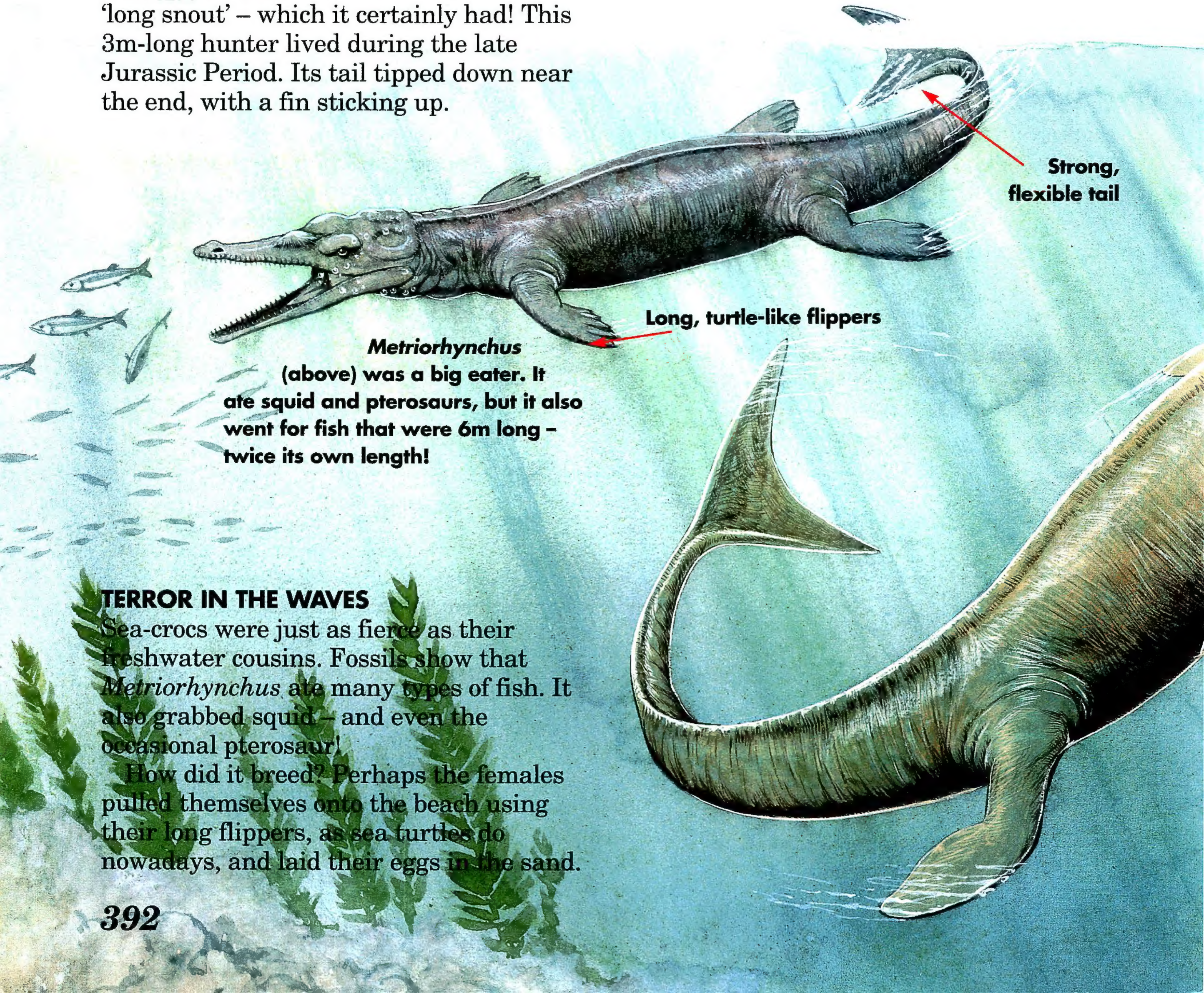
MORE LIKE A FISH

Some sea-crocs became even more suited to an ocean-going life. They even started to look more like fishes. They lost the heavy, bony armour and their skin became smooth and slippery. Legs evolved into flippers. Tails became tall and thin, more like fins. But they were still reptiles and they had lungs, not gills. They had to come to the water's surface for a breath of fresh air, as whales do today.

LONG SNOUT

One of these sea-crocs was *Metriorhynchus* (met-ree-or-rin-kuss). The name means 'long snout' – which it certainly had! This 3m-long hunter lived during the late Jurassic Period. Its tail tipped down near the end, with a fin sticking up.

Scientists are not sure whether prehistoric sea-crocs crawled onto land to lay their eggs like the sea-dwelling green turtle (above) does today.



Metriorhynchus **(above) was a big eater. It ate squid and pterosaurs, but it also went for fish that were 6m long – twice its own length!**

TERROR IN THE WAVES

Sea-crocs were just as fierce as their freshwater cousins. Fossils show that *Metriorhynchus* ate many types of fish. It also grabbed squid – and even the occasional pterosaur!

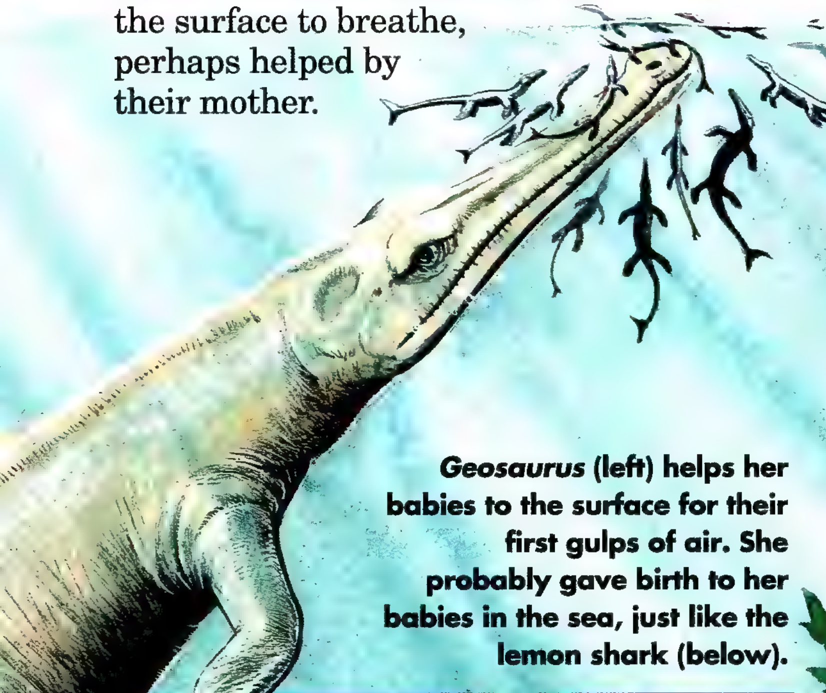
How did it breed? Perhaps the females pulled themselves onto the beach using their long flippers, as sea turtles do nowadays, and laid their eggs in the sand.

TAIL TALE

Towards the end of the Jurassic Period, sea-crocs became even better suited to life in the ocean waves. *Geosaurus* (gee-oh-saw-rus), which means 'rock reptile', had a tail fin very similar to that of a fish or ichthyosaur. It must have been a very fast swimmer, thrashing its tail from side to side and using its wide paddles for steering. *Geosaurus'* flippers would have been useless on land. So it may have had some way of producing its babies in the water. Like ichthyosaurs, the female probably carried the eggs inside her body until they hatched. The babies would float or swim straight to the surface to breathe, perhaps helped by their mother.

Is it true that some eggs hatch inside the mother?

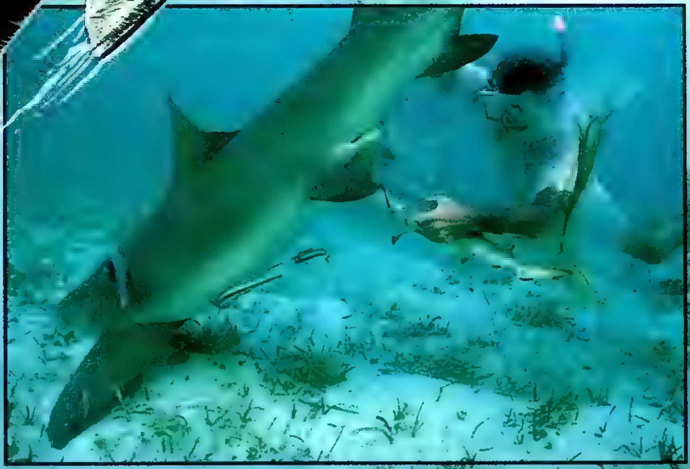
Yes. The female keeps her eggs safe and warm inside her body until they hatch. The babies come out of the eggshells and then out of the mother's birth opening fully formed and ready to swim, breathe and feed. Today, sea-snakes, several kinds of fishes, some amphibians and some sharks have babies this way. The are all called ovo-viviparous. 'Ovo' means egg, 'vivi' means alive, and 'parous' is to do with birth. In prehistoric times, ichthyosaurs and some sea-crocodiles, such as *Geosaurus*, were probably ovo-viviparous.



***Geosaurus* (left) helps her babies to the surface for their first gulps of air. She probably gave birth to her babies in the sea, just like the lemon shark (below).**

TOO-FAST FOOD

The whole sea-croc group did not last much longer after the Jurassic Period. During the Cretaceous Period, they were replaced by the pliosaurs and mosasaurs. Also, more advanced bony fishes were replacing the older, slower types of fishes that many sea-crocs ate. Faced with this changing world, the sea-crocodiles died out well before the last of the dinosaurs.

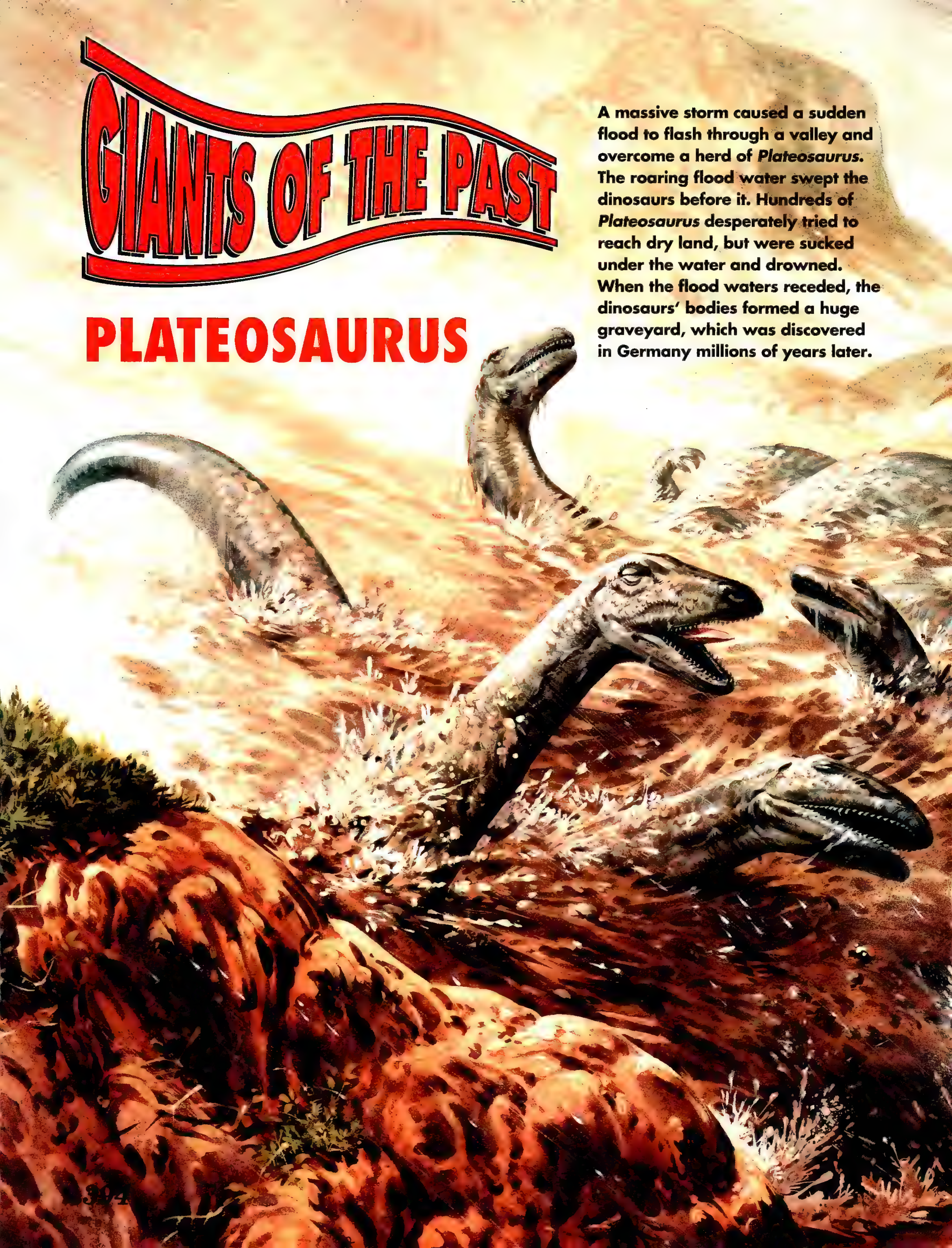


A baby lemon shark is born. It is already fully formed. The baby shark hatched out of its egg before it came out of its mother's body. Perhaps this is how *Geosaurus* was born.

GIANTS OF THE PAST

PLATEOSAURUS

A massive storm caused a sudden flood to flash through a valley and overcome a herd of *Plateosaurus*. The roaring flood water swept the dinosaurs before it. Hundreds of *Plateosaurus* desperately tried to reach dry land, but were sucked under the water and drowned. When the flood waters receded, the dinosaurs' bodies formed a huge graveyard, which was discovered in Germany millions of years later.



3-D Gallery

HETERODONTOSAURUS

26

- Early plant-eater with three different kinds of teeth
- Lived 190 – 180 million years ago in southern Africa
- Measured 1.2m long
- Ate tough plants

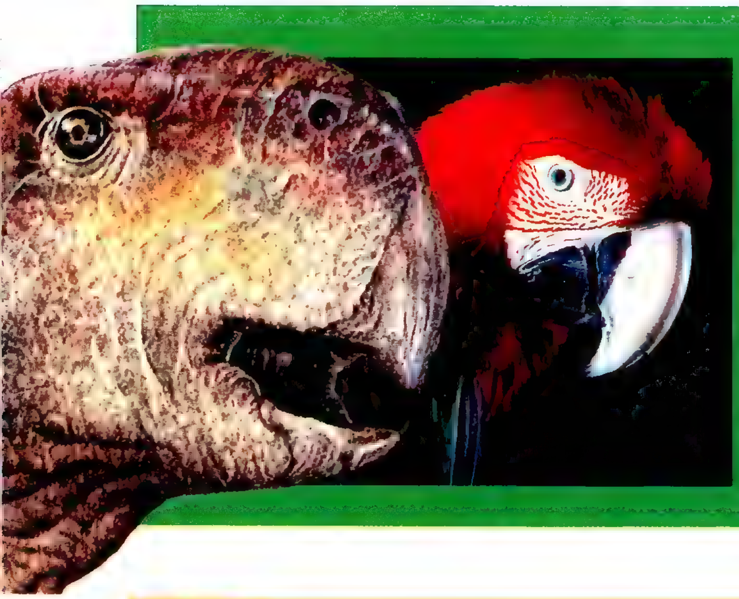
A peek at beaks

Nearly all dinosaurs had teeth. So why did some of them need beaks?

Not all dinosaurs had beaks of course; *T rex* had so many teeth that it did not need a beak. But a beak was an essential tool for those dinosaurs that ate a lot of tough leaves and branches.

CUTTING EDGE

Ferns, cycads, palms and oak trees grew very successfully during the Cretaceous Period. Although these plants had quite soft leaves, their stalks were tough and woody. Just as gardeners use sharp cutters to prune bushes, some dinosaurs were equipped with a sharp, nipping beak to slice through stems.



PARROT DINOSAUR

Psittacosaurus is thought to be the first member of the ceratopian family. Its teeth were not as well-developed as later ceratopians, such as *Triceratops*, but like the rest of its family, it had a sharp, curved beak. The shape of its snout was so bird-like that the experts who discovered it called it 'parrot lizard'.

Its curved beak lets this macaw crack the hardest nut. *Psittacosaurus'* beak (far left) was strong, too.

***Triceratops* (left) used its beak to chop plants into manageable bite-sized pieces.**

BIGGER AND BETTER

As time went by, horned dinosaurs developed even better beaks. By the Late Cretaceous, ceratopians' beaks were perfectly designed for their purpose. *Triceratops* was one of the last known dinosaurs to walk the Earth. Its beak cut through large, tough plants like a pair of wire cutters.

BITE-SIZE PIECES

Once the leaves and stems were nipped off the bush, a horned dinosaur could store them in its cheeks. The food was then moved to the back of the mouth where rows of teeth sliced it up before the dinosaur swallowed.

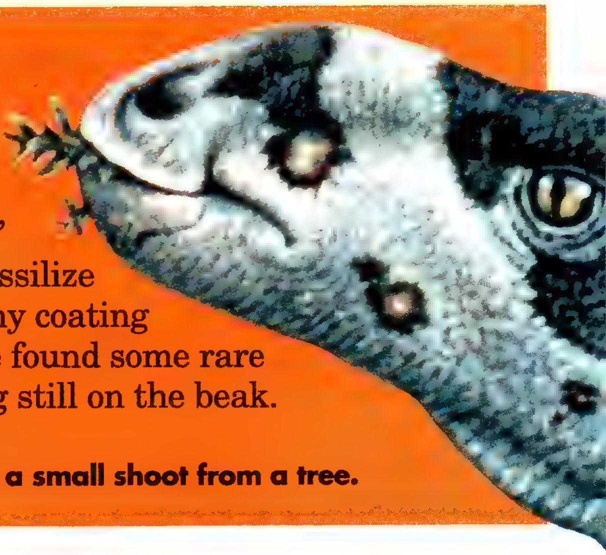
EATING ALL DAY

Rather like our hair and nails, dinosaurs' beaks were always growing. If dinosaurs' beaks had not re-grown, a lifetime of munching on leaves and branches would eventually have worn them right down.

Dryosaurus **(left) lived during the Jurassic, the age of the conifers. Its narrow beak was perfect for nipping off pieces of tough fir.**

BONY BEAK

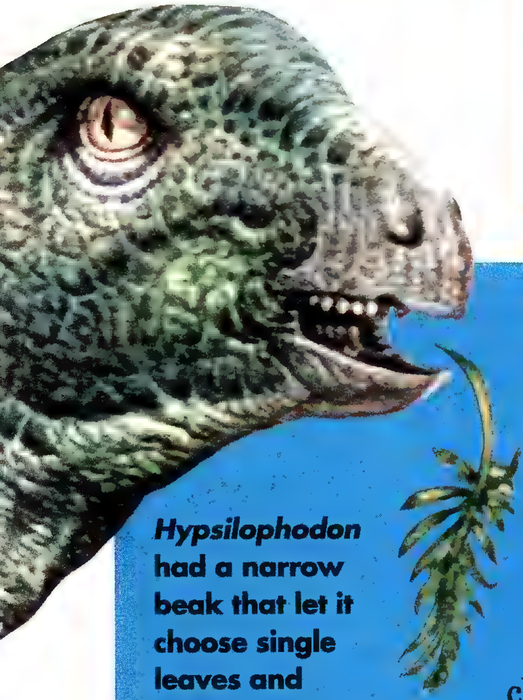
The inside of a dinosaur's beak was made of bone. This bone was covered in a horny coating. Like dinosaurs' claws and skin, this did not fossilize well. We know about this horny coating because palaeontologists have found some rare skulls with the horny covering still on the beak.



Tenontosaurus **(right) daintily nips a small shoot from a tree.**

PICKING AT THEIR FOOD

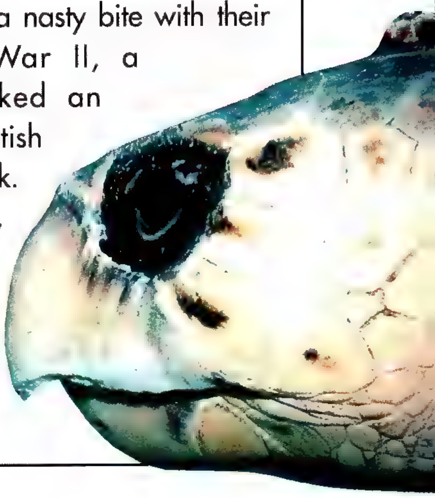
Some experts think that beaked dinosaurs were quite choosy with their food. Dinosaurs with narrow beaks, such as *Hypsilophodon*, may have nipped shoots and buds that looked particularly good. Duckbills were probably less fussy. They may have used their broad bills to pick up mixed mouthfuls of vegetation.



Hypsilophodon **had a narrow beak that let it choose single leaves and stems to eat.**

Is it true that some modern reptiles have beaks?

Beaked dinosaurs had tremendous biting power. This has survived in some present-day animals. Turtles, like this loggerhead turtle (below), have been known to inflict a nasty bite with their beaks. During World War II, a loggerhead turtle attacked an inflatable life-raft full of British airmen with its curved beak. Like beaked dinosaurs, turtles are not naturally aggressive, but they are short-sighted – maybe the loggerhead turtle saw the lifeboat as a threat!



Running with the herd

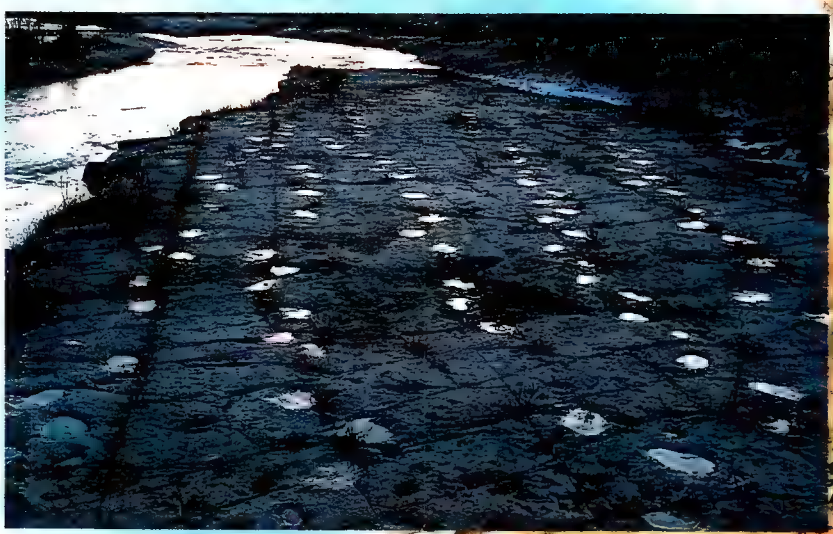
Some of the most exciting trackway discoveries prove that dinosaurs roamed the land in herds.

In North America, huge areas of mudstone have been found covered in a mass of dinosaur footprints. Many of the footprints are going the same way. Experts believe this means that the dinosaurs must have been travelling in large groups, or herds.

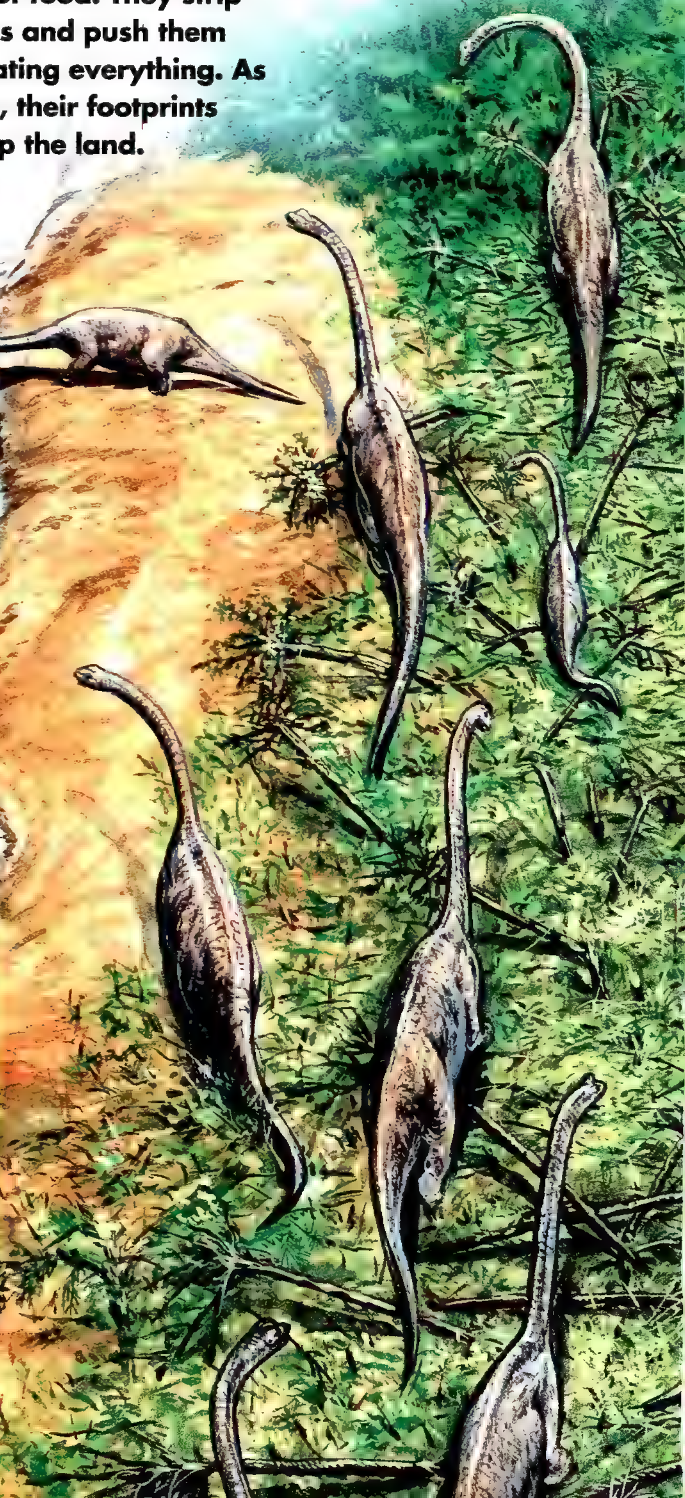
PROTECTING THE YOUNG

These trackways provide important clues about the way dinosaurs in herds behaved. Some sauropod trackways show big footprints on the outside and smaller ones in between. Experts believe that this was because the herd moved in a special way to protect its young. Adult dinosaurs stayed on the outside to frighten off predators, while the babies stayed safely in the middle.

Five massive sauropods left these tracks as they plodded along together millions of years ago.



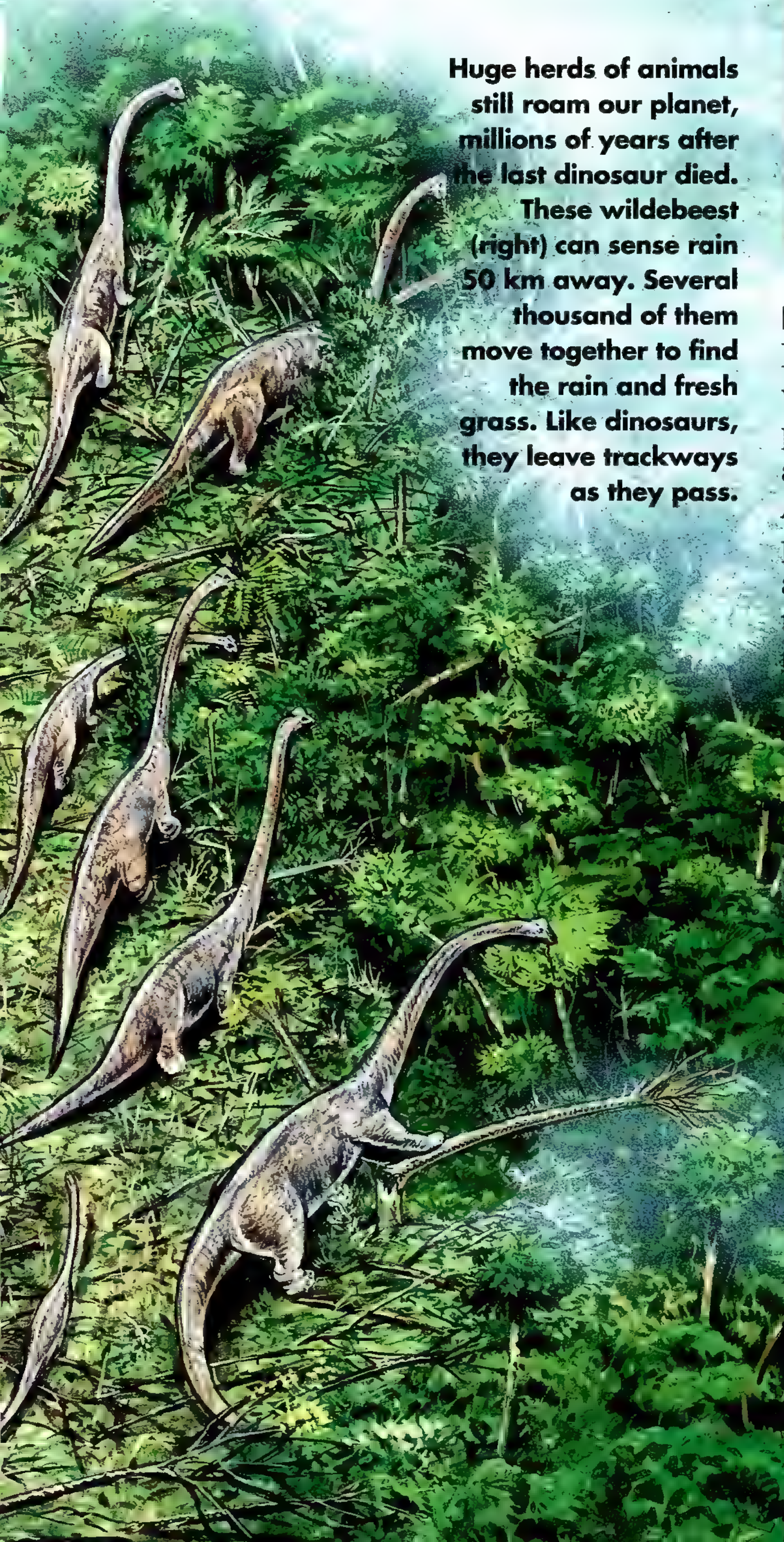
A herd of *Brachiosaurus* travels across the country in search of food. They strip the trees and push them over, eating everything. As they go, their footprints churn up the land.



MODERN HERDS

Today, many animals, such as wildebeest, that live in herds on the great African plains migrate (move) to fresh feeding grounds at different times of the year. They travel hundreds of miles in great herds across the plains to find enough food to feed themselves.

Huge herds of animals still roam our planet, millions of years after the last dinosaur died. These wildebeest (right) can sense rain 50 km away. Several thousand of them move together to find the rain and fresh grass. Like dinosaurs, they leave trackways as they pass.



POLE TO POLE

Dinosaur herds behaved in much the same way millions of years ago. Fossil bones of plant-eating dinosaurs have been found amazingly close to both the Arctic and Antarctic Circles. There would have been plenty of food there in the summer but almost none in the winter. So it seems likely that the herds were just summer visitors, travelling north and south in search of food.

IT'S A FACT

TOO COLD FOR COMFORT

Winters in the Arctic and the Antarctic were cool and dark in the Age of the Dinosaurs. Dinosaurs would have needed warm coats to survive.

But there is no evidence that they grew any fur to keep the cold out. Scientists believe that this is another good reason to think that herds migrated away from the Poles when winter came.

Changing the landscape

What happened to the countryside when herds of massive dinosaurs ate their way across the land?

Dinosaurs needed lots of food to keep going. Herds of the biggest plant-eaters must have been on the move almost all the time searching for fresh feeding grounds.

STRIPPING THE FORESTS

Giant sauropods were specially adapted to make feeding as easy as possible. They all had extra-long necks which they either used to munch on low-growing ferns or to tear leaves off high branches. Just one *Brachiosaurus* may have eaten 1,500kg of food in a day. So a herd of sauropods could have stripped a forest almost bare.

When *Brachiosaurus* (below) pushed trees over to reach the leaves, light reached plants growing on the forest floor and gave them a chance to grow. Elephants can do this, too.

Just like today's elephants (above), *Brachiosaurus* must have stripped the countryside of its vegetation. But this was not always a disaster for the land ...

FAST FOOD

Plant-eating dinosaurs devoured almost everything, from pine cones to palm leaves. They were built to eat a huge range of plants. Sauropods like *Brachiosaurus* simply swallowed everything up. Ceratopians like *Triceratops* used their horny beaks and the scissor-like teeth at the back of their mouths to rip off the toughest leaves.

The havoc below, made by elephants, must be like the damage *Brachiosaurus* left behind. Scientists think dinoturbation (disturbing the land) helped to create the right conditions for the first flowering plants to grow.

HELPING PLANTS TO GROW

The largest modern plant-eater is an elephant. A feeding herd can cause so much damage to woodland that they sometimes have to be shot to reduce their numbers. But experts now believe elephants can also help the countryside by creating more open places. New plants can grow there on which other animals can feed. Elephants also produce a lot of dung. Dung makes the soil more fertile. It also contains seeds from the trees the elephants have eaten, which grow into new trees. Herds of dinosaurs may have helped their environment in the same way.

THE PLANTS FIGHT BACK

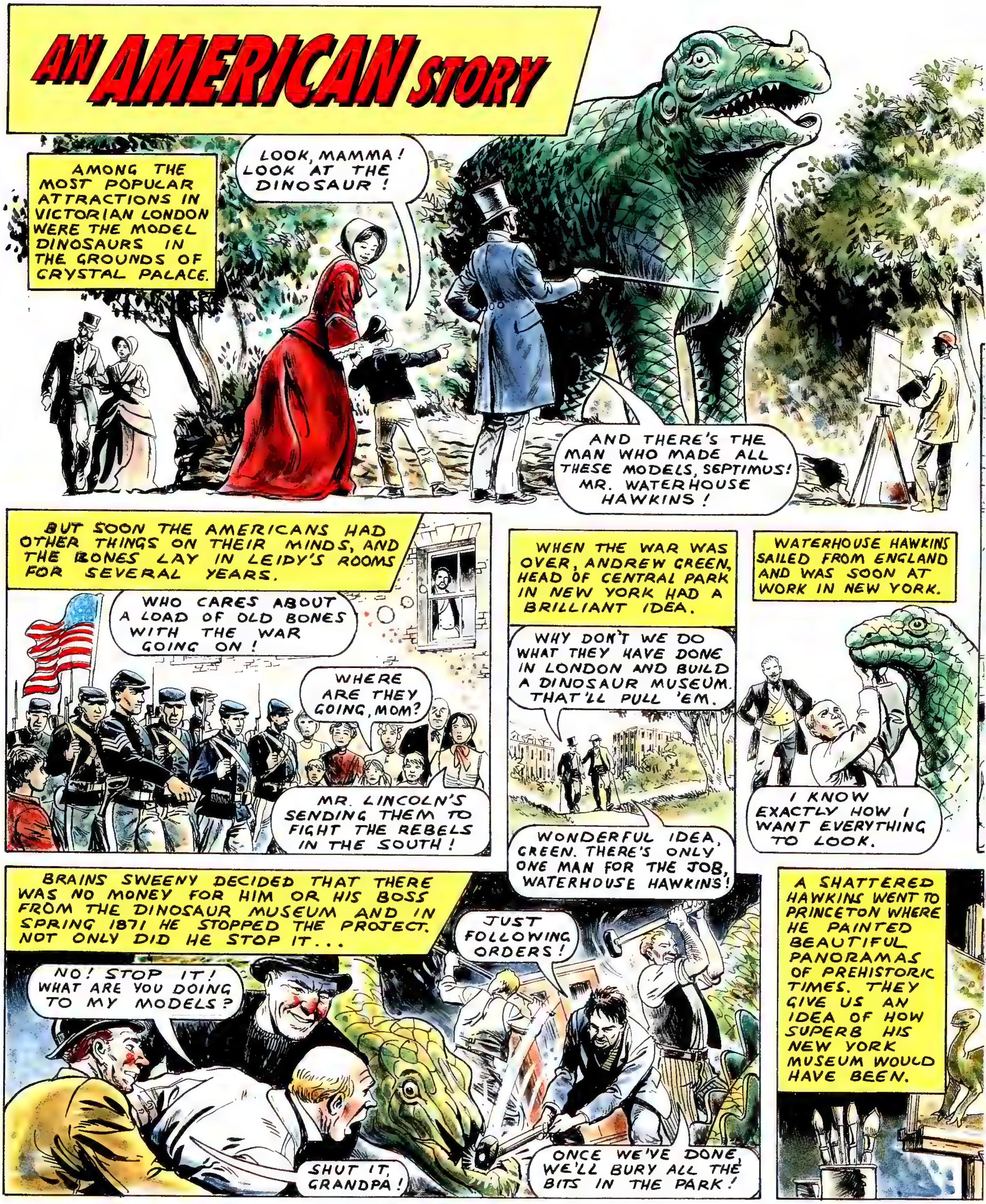
No other group of plant-eaters since the dinosaurs has been able to eat so many different sorts of vegetation. Many of today's plant-eaters eat grass, and there was no grass at the time of the dinosaurs.

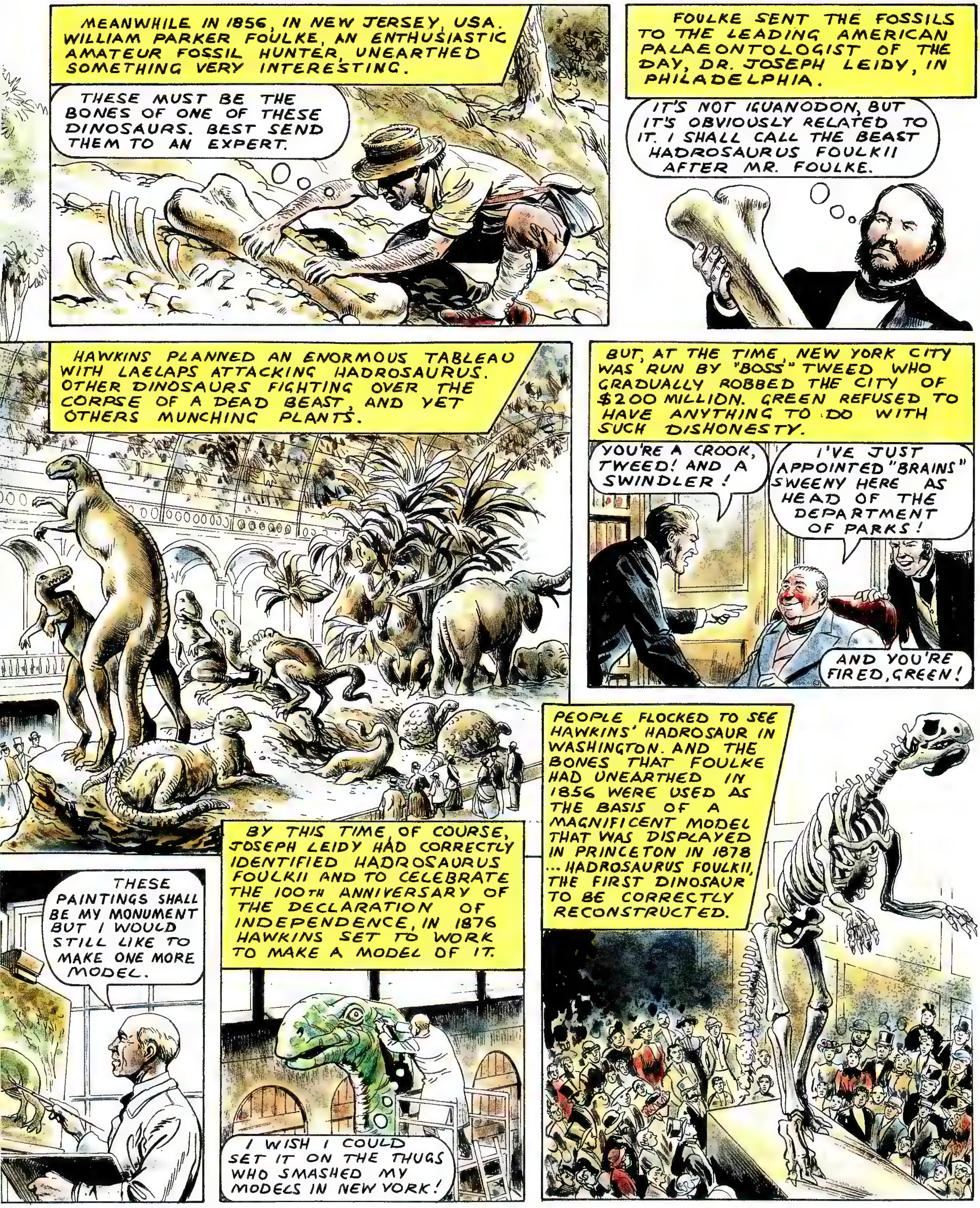
Few plants survived the Age of the Dinosaurs but the ones that continue to grow today still have the special defences they must have developed millions of years ago to try to stop the dinosaurs eating them. They include ferns which contain special chemicals that can poison animals that try to feed on them, and some prickly-leaved plants and leathery-leaved trees like the monkey puzzle tree.

DID DINOSAURS INVENT FLOWERS?

Herds of giant plant-eating dinosaurs must have left vast areas of stripped trees and trampled earth behind them. Experts think that sauropods might have helped the first flowering plants to flourish in the Cretaceous Period. Flowering plants, like the magnolia below, spread quickly in the areas that had been cleared, just as weeds spring up in a freshly dug garden.

AN AMERICAN STORY


AMONG THE MOST POPULAR ATTRACTIONS IN VICTORIAN LONDON WERE THE MODEL DINOSAURS IN THE GROUNDS OF CRYSTAL PALACE.
LOOK, MAMMA! LOOK AT THE DINOSAUR!
AND THERE'S THE MAN WHO MADE ALL THESE MODELS, SEPTIMUS! MR. WATERHOUSE HAWKINS!
BUT SOON THE AMERICANS HAD OTHER THINGS ON THEIR MINDS, AND THE BONES LAY IN LEIDY'S ROOMS FOR SEVERAL YEARS.
WHO CARES ABOUT A LOAD OF OLD BONES WITH THE WAR GOING ON!
WHERE ARE THEY GOING, MOM?
MR. LINCOLN'S SENDING THEM TO FIGHT THE REBELS IN THE SOUTH!
WHEN THE WAR WAS OVER, ANDREW GREEN, HEAD OF CENTRAL PARK IN NEW YORK HAD A BRILLIANT IDEA.
WHY DON'T WE DO WHAT THEY HAVE DONE IN LONDON AND BUILD A DINOSAUR MUSEUM. THAT'LL PULL 'EM.
WONDERFUL IDEA, GREEN. THERE'S ONLY ONE MAN FOR THE JOB, WATERHOUSE HAWKINS!
WATERHOUSE HAWKINS SAILED FROM ENGLAND AND WAS SOON AT WORK IN NEW YORK.
I KNOW EXACTLY HOW I WANT EVERYTHING TO LOOK.
BRAINS SWEENY DECIDED THAT THERE WAS NO MONEY FOR HIM OR HIS BOSS FROM THE DINOSAUR MUSEUM AND IN SPRING 1871 HE STOPPED THE PROJECT. NOT ONLY DID HE STOP IT...
NO! STOP IT! WHAT ARE YOU DOING TO MY MODELS?
JUST FOLLOWING ORDERS!
SHUT IT, GRANDPA!
ONCE WE'VE DONE, WE'LL BURY ALL THE BITS IN THE PARK!
A SHATTERED HAWKINS WENT TO PRINCETON WHERE HE PAINTED BEAUTIFUL PANORAMAS OF PREHISTORIC TIMES. THEY GIVE US AN IDEA OF HOW SUPERB HIS NEW YORK MUSEUM WOULD HAVE BEEN.


MEANWHILE IN 1856, IN NEW JERSEY, USA. WILLIAM PARKER FOULKE, AN ENTHUSIASTIC AMATEUR FOSSIL HUNTER, UNEARTHED SOMETHING VERY INTERESTING.
THESE MUST BE THE BONES OF ONE OF THESE DINOSAURS. BEST SEND THEM TO AN EXPERT.
FOULKE SENT THE FOSSILS TO THE LEADING AMERICAN PALAEONTOLOGIST OF THE DAY, DR. JOSEPH LEIDY, IN PHILADELPHIA.
IT'S NOT IGUANODON, BUT IT'S OBVIOUSLY RELATED TO IT. I SHALL CALL THE BEAST HADROSAURUS FOULKII AFTER MR. FOULKE.
HAWKINS PLANNED AN ENORMOUS TABLEAU WITH LAELAPS ATTACKING HADROSAURUS. OTHER DINOSAURS FIGHTING OVER THE CORPSE OF A DEAD BEAST, AND YET OTHERS MUNCHING PLANTS.
BUT, AT THE TIME, NEW YORK CITY WAS RUN BY "BOSS" TWEED WHO GRADUALLY ROBBED THE CITY OF $200 MILLION. GREEN REFUSED TO HAVE ANYTHING TO DO WITH SUCH DISHONESTY.
YOU'RE A CROOK, TWEED! AND A SWINDLER!
I'VE JUST APPOINTED "BRAINS" SWEENY HERE AS HEAD OF THE DEPARTMENT OF PARKS!
AND YOU'RE FIRED, GREEN!
THESE PAINTINGS SHALL BE MY MONUMENT BUT I WOULD STILL LIKE TO MAKE ONE MORE MODEL.
BY THIS TIME OF COURSE, JOSEPH LEIDY HAD CORRECTLY IDENTIFIED HADROSAURUS FOULKII AND TO CELEBRATE THE 100TH ANNIVERSARY OF THE DECLARATION OF INDEPENDENCE, IN 1876 HAWKINS SET TO WORK TO MAKE A MODEL OF IT.
I WISH I COULD SET IT ON THE THUGS WHO SMASHED MY MODELS IN NEW YORK!
PEOPLE FLOCKED TO SEE HAWKINS' HADROSAUR IN WASHINGTON. AND THE BONES THAT FOULKE HAD UNEARTHED IN 1856 WERE USED AS THE BASIS OF A MAGNIFICENT MODEL THAT WAS DISPLAYED IN PRINCETON IN 1878 ... HADROSAURUS FOULKII, THE FIRST DINOSAUR TO BE CORRECTLY RECONSTRUCTED.

Improve and test your knowledge with...

DINO Fact File

Climb down *Diplodocus*' neck answering the questions as you go.

3 *Ornithomimus* used its claws to:
- a) grip the ground
- b) tear flesh
- c) scratch itself

4 *Abelisaurus* was from Patagonia, which is in:
- a) Brazil
- b) Argentina
- c) Chile

5 How did *Plateosaurus* prefer to walk?
- a) on all fours
- b) on two legs
- c) on tip-toes

6 How much did *Frenguellisaurus* weigh?
- a) 350kg
- b) 350g
- c) 35kg

7 How did *Metriorhynchus* live up to its name?
- a) it had a long snout
- b) it had a massive belly
- c) it had a moon-shaped head crest

8 As well as small animals, *Ornithomimus* may have eaten:
- a) fruit and berries
- b) large dinosaurs
- c) pterosaurs

9 Why did dinosaurs migrate?
- a) to look for food and a better climate
- b) for a change of scenery
- c) to meet other dinosaurs

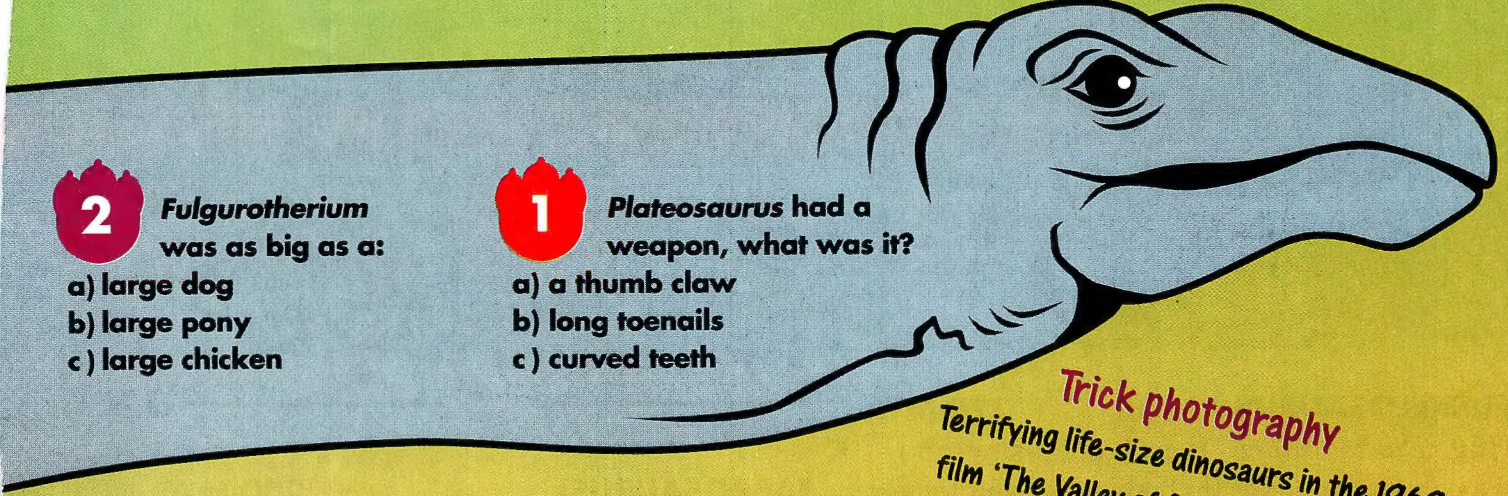
10 Where was the first correctly reconstructed dinosaur exhibited?
- a) Princeton, USA
- b) Crystal Palace, Britain
- c) Paris, France

Rare but famous

Although huge Tyrannosaurus rex is one of the most famous of all the dinosaurs, only 10 skeletons have ever been discovered. It was probably seen quite rarely by Ankylosaurus, which lived at the same time.

First sharks

Hybodus was a type of shark that lived during the Age of the Dinosaurs. It was medium-sized, with large spines on the front edges of its fins. Like sharks today, its skeleton was not made of bone, but of a gristly material called cartilage (the tip of your nose is made out of the same thing). Sharks have adapted so well to their environment that they are one of the few prehistoric animals that are still with us today.



2 ***Fulgurotherium*** **was as big as a:**
- a) large dog
- b) large pony
- c) large chicken

1 ***Plateosaurus*** **had a weapon, what was it?**
- a) a thumb claw
- b) long toenails
- c) curved teeth

Tough eating

Plant-eating dinosaurs in Jurassic times had a tough time! When palm-like trees called cycads appeared, their leaves were so tough and prickly that only those dinosaurs with very powerful jaws, such as Triceratops, could eat them. Many types of cycad still exist in tropical parts of the world.

Trick photography

Terrifying life-size dinosaurs in the 1969 film 'The Valley of Gwangi' were actually only models that were smaller than a rabbit! The dinosaurs were filmed separately from the actors and then merged to show humans fighting huge beasts. Of course, it's just a film – dinosaurs and humans never met.

Not so 'mega'

Megalosaurus was the first dinosaur to be named. Its name means 'great lizard' and this dinosaur was discovered in 1824. However, its name is rather strange because this 7m-long theropod was much smaller than many other dinosaurs that were discovered later on.

Megalosaurus

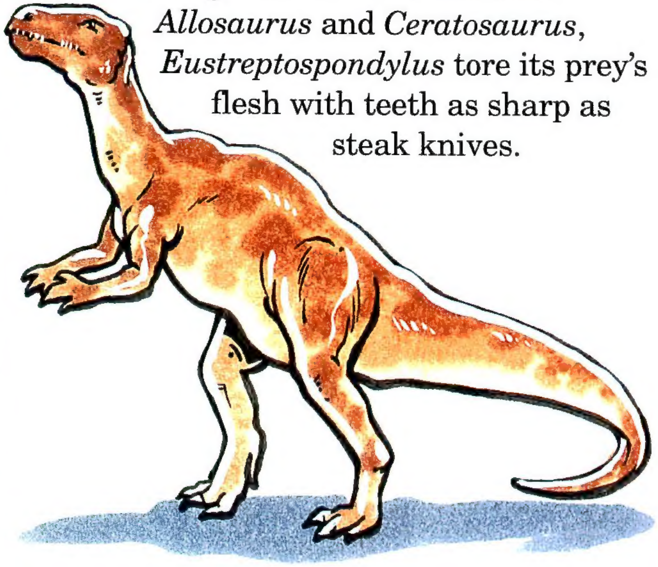
Answers to the questions on inside back cover

EUSKELOSAURUS **220 MYA**

Huge *Euskelosaurus* (yoosk-el-oh-saw-rus) was about 8m long. Its body was even longer than an elephant's. One of its thigh bones alone was the waist height of the average adult human. *Euskelosaurus* was one of the first dinosaurs discovered in Africa. Only the body was found, but scientists think that *Euskelosaurus* probably had a small head at the end of a long neck. Like other sauropods, it walked on four legs and ate plants. It is possible that when *Euskelosaurus* was alive, this big dinosaur was quite common. Its name means 'true-limbed reptile'.

EUSTREPTOSPONDYLUS **170 MYA**

The name *Eustreptospondylus* (yoo-strep-toh-spond-ih-lus) means 'well-curved vertebrae'. This large carnosaur lived in the Middle Jurassic Period in what is now Oxfordshire, England, and in France. *Eustreptospondylus* was a meat-eating dinosaur about the length of a large car. Like its relatives *Allosaurus* and *Ceratosaurus*, *Eustreptospondylus* tore its prey's flesh with teeth as sharp as steak knives.



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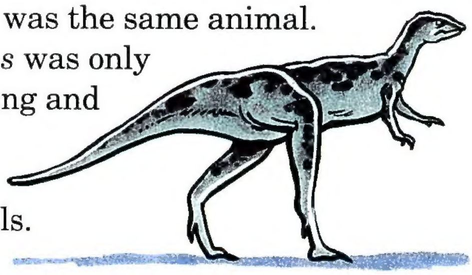
FABROSAURUS **200 MYA**

A piece of jaw and a few teeth were found in southern Africa in 1964. They belonged to *Fabrosaurus* (fab-roh-saw-rus), meaning 'Fabre's reptile'. A more complete skeleton was found later, but it was given a different name (*Lesothosaurus)* as scientists were not sure that it was the same animal. *Fabrosaurus* was only about 1m long and ate plants, insects or dead animals.

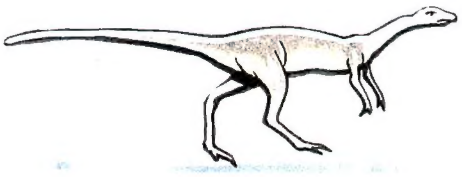


FRENGUELLISAURUS **210 MYA**

Meat-eating *Frenguellisaurus* (fren-gel-ih-saw-rus) lived in Argentina in the Triassic. It had a long, low head and attacked its prey with sharp teeth. *Frenguellisaurus* weighed about 350kg and means 'Frenguelli's reptile'.

FULGUROTHERIUM **130 MYA**

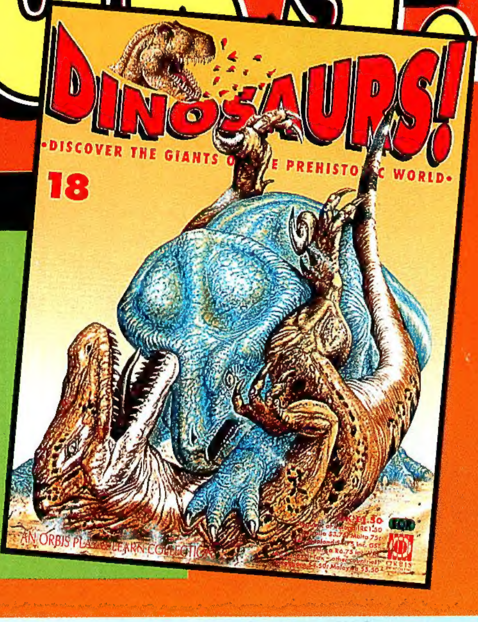
Only the thigh bone of this dinosaur has been found. *Fulgurotherium* (full-goo-roh-theh-ri-um) lived in Australia and means 'lightning beast'. This small, lightly built dinosaur was about the length of a large dog. It ran fast on two long legs and ate plants.



MYA = MILLION YEARS AGO

COMING IN PART 18 OF

DINOSAURS!


DINOSAURS!
•DISCOVER THE GIANTS OF THE PREHISTORIC WORLD•
18
AN ORBIS PUBLISHING COLLECTION

Why were two dinosaurs found locked in a weird embrace? TIME DETECTIVE investigates. And find out about dinosaurs' brains in SPOTTER'S GUIDE.

PLUS

DINOSAUR MODEL: the last part of your *T rex* body model.
Plus
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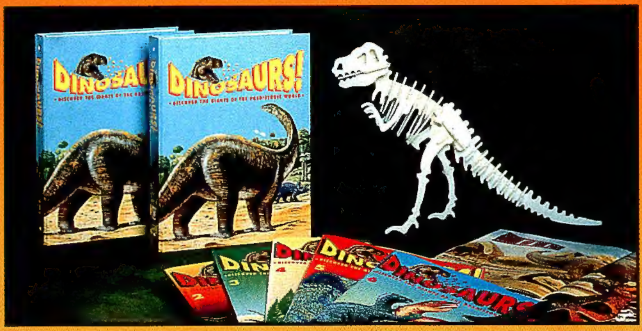

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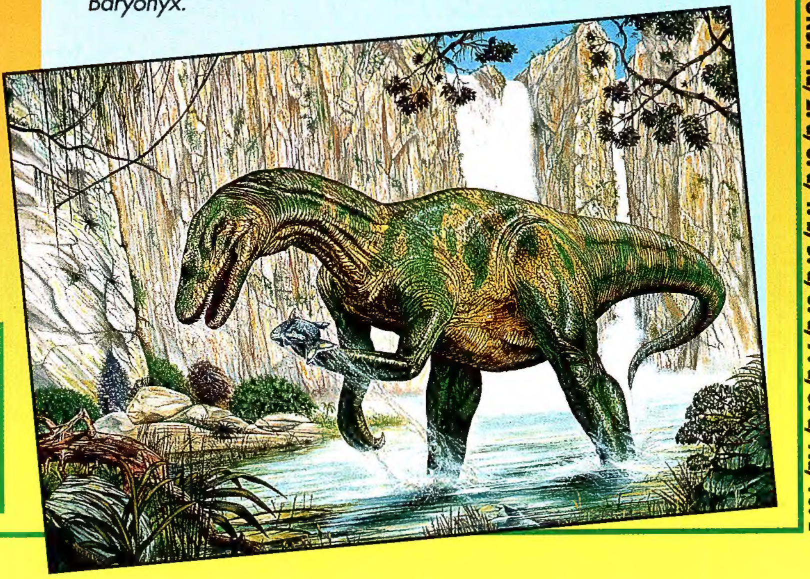
THE DINOSAURS! POSTER COLLECTION

Have you ever wanted to fill your room with dinosaurs? Now you have your chance – with the *Dinosaurs!* POSTER COLLECTION. Each poster is a 820 x 570mm (nearly eight times the size of this page) and features a superb dinosaur artwork. You'll find facts and figures about the dinosaur on the back – PLUS a look at some other prehistoric animals. The sixth poster is *Baryonyx*.



ANSWERS TO DINO FACT FILE QUESTIONS: 1.a, 2. a, 3. a, 4. b, 5. a, 6. a, 7. a, 8. a, 9.a, 10. a

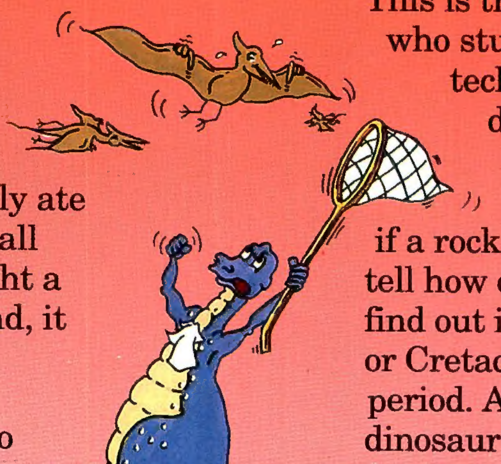
Dr. David Norman of Cambridge University answers your dinosaur questions

ASK THE EXPERT

Why did some dinosaurs have head crests?

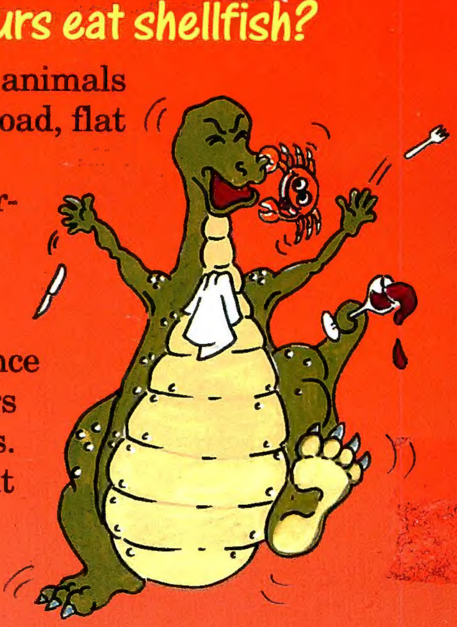
A crest or ridge on the head is something very noticeable – in the same way that you would immediately spot someone in the street wearing a funny hat, or a bright green wig. This is precisely the idea. Dinosaurs with crests wanted to be noticed. They wanted to scare predators away, to attract other dinosaurs or just to let others know that they were there. Nearly all the crests were different so that dinosaurs could tell one from another.

Could dinosaurs catch and eat pterosaurs?



We have no evidence that dinosaurs regularly ate pterosaurs, but if a small hunting dinosaur caught a pterosaur on the ground, it would have eaten it. However, they were probably rather bony to eat. A few giant sea-going reptiles (plesiosaurs) may have eaten pterosaurs that had crash-landed into the sea.

Did any dinosaurs eat shellfish?



To eat shellfish, animals usually need broad, flat teeth. They use these hammer-like teeth to crack open the hard shells. There is no evidence that any dinosaurs had teeth like this. Experts agree that it is unlikely that dinosaurs ate shellfish.

How can experts tell when a dinosaur lived?

This is the work of geologists – scientists who study rocks. There is a variety of techniques which geologists use to date rocks. The most important one is called 'radiometric dating'. First, geologists find out if a rock is radioactive, and then they can tell how old it is. For example, they can find out if it is from the Triassic, Jurassic or Cretaceous and from what part of the period. Any dinosaur fossils that are found in the rock will be the same age.

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